

# Identification of Turbomachinery Noise Sources Using Acoustical Holography, Phase I

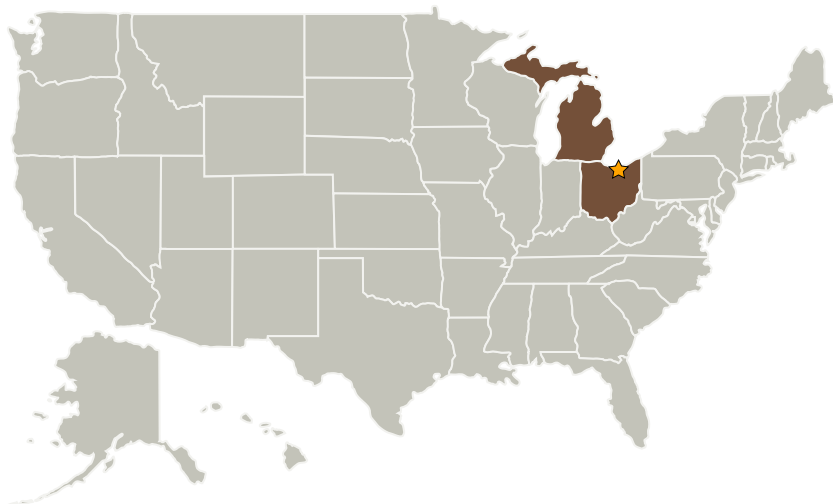
Completed Technology Project (2004 - 2004)



## Project Introduction

Evaluation and enhancement of the acoustical performance of turbomachinery requires knowledge of the acoustic sources. However, the noise generation mechanisms associated with turbomachinery are complex and as result it is not easy to identify these noise sources. The development of an integrated experimental/numerical technique that is based on holography and is applicable for the identification and ranking of complex noise sources is proposed. A new technique based on potential integral equations will be developed to rapidly evaluate the noise sources of complex structures. Generalized acoustical holography that is applicable for arbitrary geometry is extended by incorporating aeroacoustic noise sources in the presence of mean flow.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role                    | Type        | Location            |
|-------------------------------|-------------------------|-------------|---------------------|
| ★ Glenn Research Center(GRC)  | Lead Organization       | NASA Center | Cleveland, Ohio     |
| Comet Technology Corporation  | Supporting Organization | Industry    | Ann Arbor, Michigan |



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Glenn Research Center (GRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Michigan

Ohio

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

Satha Raveendra

## Technology Areas

### Primary:

- TX15 Flight Vehicle Systems
  - └ TX15.1 Aerosciences
    - └ TX15.1.4 Aeroacoustics